ACM Data Science Task Force Course Example

Principles of Artificial Intelligence
Peking University, Beijing
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Knowledge Areas that contain competencies (knowledge, skills, and dispositions) covered in the course

Knowledge Area	Total Number of Contact Hours
Artificial Intelligence	48
Machine Learning	24

Where does the course fit in your undergraduate Data Science curriculum?
Artificial intelligence is one of the backbone courses set up by famous universities at home and abroad, and it is also one of the main research directions of famous universities and research institutions at home and abroad. This course is a professional core course, and most students who take this course are engineering subjects. Learners of this course need to have certain computer knowledge such as data structures and algorithms, mathematical knowledge such as linear algebra, probability theory, and basic knowledge of machine learning.

What is covered in the course?
Based on a systematic review of the development process of artificial intelligence, this course focuses on introducing the core ideas, basic theories, basic methods and some applications of artificial intelligence.

What is the format of the course?
There are 12 lectures in this course, using bilingual teaching, namely Chinese and English PPT and Chinese and English assignments, Chinese teaching and communication.
The course is based on the original English textbook, and a large amount of content has been compiled and enriched according to the development and changes in the field of artificial intelligence, especially machine learning.

How are students assessed?
The course adopts a hundred-point system, reaching 60 points is considered "qualified", and reaching 85 points or more is considered "excellent". In order to ensure the authority of the certificate, the platform no longer supports free e-certificates and only provides certification certificates.
among them:
Unit test 60% [12 unit tests, a total of 100 questions, accounting for 60 points in the total score]
Final exam 40% [Conducted in the last week, a total of 40 points]

Course tools and materials
[1] Wang Wenmin: "Principles of Artificial Intelligence", Higher Education Press, August 28, 2019

www.hep.com.cn/book/details?uuid=b0900ec1-16ac-1000-804d-4f70147a3a5d

[2] Stuart Russell, Peter Norvig. "Artificial Intelligence: A Modern Approach (3rd Edition)". Prentice Hall, Dec. 11, 2009.

[3] Stuart Russell and others, translated by Yin Jianping: "Artificial Intelligence: A Modern Method (3rd Edition)", Tsinghua University Press, November 1, 2013.

[4] Artificial Intelligence: A Modern Approach, “aima.cs.berkeley.edu”

[5] Mehryar Mohri, Afshin Rostamizadeh and Ameet Talwalkar. "Foundations of Machine Learning". The MITPress, Aug. 17, 2012.

Why do you teach the course this way?

This course is mainly in the form of classroom face-to-face, interspersed with small class discussions, flip classes, and experiments. Classroom face-to-face teaching is mainly taught by teachers, as the most common form of teaching, can be more comprehensive and systematic transfer of the main knowledge points to everyone.

Body of Knowledge coverage

KA	Sub-domain	Competencies Covered	Hours
AI	General, Knowledge representation and reasoning – logic based, Knowledge representation and reasoning – probability based, Planning and search strategies	1. Introduction 2. Intelligent Agent 3. Solving Problems by Search 4. Local Search and Swarm Intelligence 5. Adversarial Search 6. Constraint Satisfaction Problem 7. Reasoning by Knowledge 8. Classic and Real-world Planning	48
ML	General	1. Perspectives about Machine Learning 2. Tasks in Machine Learning 3. Paradigms in Machine Learning 4. Models in Machine Learning	24

Additional topics

Other comments